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Game(play) Archives: Quebec Video Games as Case Study

ABSTRACT
This article presents the philosophy behind our preservation protocol and archival packages in an attempt to stimulate the discussion surrounding game(play) preservation initiated more than a decade ago. These packages consist of audio-visual recordings of play sessions inspired by Longplay videos; game datasheets, which include contextual information on the game being preserved; and digital copies of meta and paratextual documents relating to the game. We also showcase our reflections on the process of assembling a corpus of video games developed in the province of Quebec, Canada for their preservation. These reflections stem from this project's origin as a pedagogical endeavour as it aimed to help both researchers and students develop good archival practices. To enter the next ten years of game studies, we ought to share our approaches to video game preservation. Without game(play) archives, there are no game(play) studies. The main objective of this project is to create guidelines for gameplay archives and preservation.

KEYWORDS: Video games; preservation; archives; gameplay; Quebec.

1. INTRODUCTION

The Video Game Observation and Documentation University Lab (LUDOV) of the Université de Montréal unites the various initiatives dedicated to the study of video games within our university's Art History and Film Studies department. Its ever-growing video game collection consists primarily of North American home consoles (from the Magnavox Odyssey to the Sony PlayStation 5 and Oculus Quest 2, and also the ColecoVision, TurboGrafx-16 and Atari Jaguar) and portable consoles (Game Boy, Atari Lynx, PlayStation Portable, Nintendo 3DS, etc.), as well as some Japanese consoles (Famicom and Super Famicom). Furthermore, LUDOV houses more than 6000 games, numerous accessories and peripherals (Nintendo Power Glove, Sega Activator and Intellivoice), and diverse forms of paratext (boxes, manuals, magazines, etc.). The foundation of this collection resides on the materiality of gaming artefacts and the main objective of the laboratory is to support the pedagogical activities of the department's

courses and seminars. Granting access to a playable collection is essential as it gives students first-hand experience of video gaming history. As a home to faculty research projects, the laboratory also aims to encourage rigorous historical inquiry, reflect on issues relating to hardware obsolescence, and collaborate with communities working towards creative solutions to these problems.

Montreal has been considered a "Mecca of video games" (Manenti, 2011) for many years and the province of Quebec is seen as an international leader in Triple-A and Indie game development, but little has been done to preserve Quebec's video gaming history. Thus, we wish to kickstart such efforts and contribute to scholarship on local histories (see Swalwell, 2009; Švelch, 2018) by building the first archive of video games developed in the province and make it accessible to our students and scholars. Yet, like any museum or heritage institution, we soon realized that it was one thing to identify early works and another to locate and acquire them. For instance, if one of our collaborators had not personally known Anne Bergeron, the designer of *Mimi: Les aventures de Mimi la fourmi* (1984), we would not have gotten hold of one of its few surviving physical copies for the Commodore 64. We will obviously not always be so lucky. Still, even though we have that copy, we do not know how long it will remain readable or for how much time our Commodore 64s will remain operational.1 What's more, while many researchers have advocated for emulation as a mean to preserve videoludic history, such lesser-known games are sometimes only minimally documented online, let alone emulated. For example, there is no cracked or emulated copies nor video footage of *Têtards* (1982), a game published by Logidisque (the same as *Mimi*), even though it is possibly the first video game produced in Canada (Arsenault and Guay, 2021, p. 39-40; Côté, 2020; Della Rocca, 2013, p. 130). There is little information available about the game online apart from what is available on the website of the game's developer, Vincent Côté (2020), but it is only accessible through the Wayback Machine. Since software and hardware inevitably degrade, information on some games can often be difficult to locate, and there is a need to preserve both the cultural aspect of video games as well as their gameplay, it becomes obvious that simply preserving paratextual documents or a game's hardware and original housing medium is not enough. In the end, as Guay-Bélanger asserts, "to truly understand a game, to study", and we might add to teach it, "one must also understand and preserve the emergent experience of gameplay. Therefore, video games are not either material or audio-visual and cultural heritage; they are both. There is need for an approach that unifies the two" (2022, p. 661).

Taking a step back from the research conducted at LUDOV, we realized we had been advocating for the importance of what James Newman called "game(play) preservation" for some time: "Videogames are disappearing and, by default, so too is gameplay (2012). The urgent aim of game(play) preservation must surely be to record as much as we possibly can about games, and the way they are made, played and played with, while they are still with us" (New-

1. As of now, all but one of our Commodore 64s are functional, but maintenance of old equipment is an ongoing process.

man, 2012, p. 160). Indeed, we have been recording game sessions since 2005 and tried to develop methodological approaches, first for interactive movies in "Methodological questions in 'interactive film studies'" (Perron, Arsenault, Picard, & Therrien, 2008), and then for action, adventure, and real-time strategy games in "Addressing the Preservation of Gameplaying: Archiving Actional Modalities (Execution, Resolution, and Strategy)" (Dor & Perron, 2014). Maybe it is because we come from film studies, but the audiovisual traces of gameplay are important to us, especially when analysing video games:

> In front of the performative, transformative and evanescent nature of play, one has to get out of the flow of the game to ponder on it and the ways it's designed. The recording of the actual gameplay thus becomes indispensable to the study, and it emerges both as a necessary and a great tool for analysis (Dor & Perron, 2014, p. 181).

But with the wealth of tools available nowadays to record play sessions and the widespread use of cloud storage, we concluded that using a simple DVD recorder and extracting sessions onto disks to archive and preserve them was no longer the right move. We wanted a more formalized procedure. To our surprise, even after two decades in games studies, and the publication of valuable scholarship on game preservation (Armstrong & al., 2009; Bettivia, 2016), there does not seem to have been much progress in terms of gameplay preservation and archiving. For instance, even after contacting several video game curators and historians, we were unable to find publicly accessible, established guidelines detailing which gameplay elements to record and how to take in consideration technological and audiovisual specificities of the games we sought to preserve. This work is still largely conducted by communities of collectors and player-archivists, such as World of Longplays' YouTube channel (2006-present) and NintendoComplete (2013-present), who may not be transparent with the methodological, technical, and cultural foundations of their archiving practices. Additionally, the material they amass is vulnerable to copyright claims, as they extensively use audiovisual material from the games they seek to preserve.

Drawing inspiration from these fan initiatives, our protocol is the result of a pedagogical project aimed at training our students in video game archiving and creating an accessible archive of games for future research. Our initial efforts to identify games developed in the province of Quebec led to the creation of a first list of 30 games, many of which have not been preserved. This article offers tools and resources to guide video game archiving practices at large via our experience in starting to archive games made in Quebec. The first section of the article presents the theoretical underpinnings of our proposed approach to preserving video games through archival packages composed of an assemblage of gameplay recordings and paratextual material. It also discusses the rationale for the use of Longplay-inspired recordings rather than Let's Plays (LP). The second part of the article showcases the various steps in the preparation of these packages through

cultural acclimatation and technical preparation, the tools utilized to record gameplay sessions, video processing requirements, and challenges encountered throughout the conception of our archiving protocol. The primary objective of this project is to create guidelines for gameplay archives and preservation.

2. THEORETICAL UNDERPINNINGS AND GENERAL CONSIDERATIONS OF GAMEPLAY ARCHIVES

The nature of video gaming is complex and, as such, so is the video game object. To properly conduct the preservation of this medium, archival collections need to keep and gather diverse aspects that compose video games. As Guay-Bélanger puts it, video games "are assemblages of many different origins and the combination of arts forms, culture, and technologies" (2022, p. 670). While they are digital, they also have significant materiality, such as the housing medium of game software, the platforms they are played on, and the peripherals permitting play (i.e., controllers) or enhancing player experience (e.g, the. Power Glove). As mentioned earlier, the material aspect of video gaming is what forms the bulk of LUDOV's collection. But preserving and maintaining this material is challenging in the short to medium-term and, as of yet, impossible in the long-term, due to the great instability and frailty of both software and hardware (Newman 2012). Despite our best efforts to maintain our collection in working order, when hardware or software falters, we must rely on emulation available online to let our students play the games they are researching.

Emulation is an interesting, though problematic avenue for the preservation of playable versions of video games. Although several scholars have argued it is the future of game preservation, emulating games and platforms is complex and falls in a legal grey zone (Murphy, 2013, p. 48; Newman, 2012, p. 138-139; Dor, 2014, p. 28). Even if rules and exceptions surrounding this practice were clear and stable, not every game has been emulated and our lab does not have the incredible resources necessary to create such reproductions. As a result, we depend on another form of gameplay preservation: video recordings.

The practice of recording gameplay has been around since the 1970s (Lavigne, 2017, p. 5), but not every approach is well-suited for the purpose of preserving play. When considering which type of gameplay recording best fit our particular needs for game analysis as well as teaching the formal aspects of video games and the sociocultural dimensions of gaming, we hesitated between two options: Let's Plays and Longplays. The former focuses on players, as they are "a method by which videogame players record themselves commenting on gameplay for an online audience" (Hale 2013, p. 3) and the latter focuses uniquely on the experience on the screen, as it is devoid of commentary. Perhaps Simon Dor and Bernard Perron described it best when stating that:

> there is a big difference between the longplays [as non-commented videos] and Let's play videos [as commented videos]. […] the maker of a longplay […] is

> concentrating her activity to the sole gameplaying. On the opposite, the LPer is not only playing the game, [they are] also acting for the microphone or the camera. [Their] role becomes similar to the early moving picture lecturer who, by describing, joking, dramatizing and interpreting the actions on screen, was as part of the show as the film itself (Dor & Perron, 2014, p. 190).

There has been some interesting research on the use of LP for preservation purposes by scholars such as Nylund (2015, p. 57) and Glas, Van Vught, & Zijlstra, 2017, p. 147-8). However, since our goal was to preserve gameplay itself and not player-archivist's commentary, it was not the correct fit. Additionally, the commentary inherent to the Let's Play model might have done some of the work we expect from our students by providing them with previous analysis, and therefore influencing their interpretations. The best way to avoid this was to produce recordings devoid of commentary.

As their name indicates, Longplays can be quite long depending on the game played. Even though it would have been possible to use a more focused and digestible recording format, for instance using what Espen Aarseth qualified as superficial play (2003, p. 6), this would have impaired the usefulness of our archive. Van Vught & Glas argue that, whilst superficial play can be used to get the feel of a game, it is only useful for researchers already well-versed in video gaming (2017, p. 5). The same logic applies to gameplay recordings. A researcher who is already knowledgeable about a certain type of game might be able to gain much information from a superficial recording, but one who is not would most likely not be able to gain a deep understanding of the game. Nonetheless, insofar as shorter videos do have advantages (smaller file size, watchability, etc.), it is still useful to create recordings that are less extensive than Longplays. Given that our project aims to be accessible to a vast audience, from researchers to citizen archivists, but particularly for our students, longer recordings which could later be edited into shorter, more targeted ones were preferable.

Recording as much of the game as possible is ideal, but the downsides of recording high quality video files, such as their great size and length, forced us to make choices. We aimed for plausible playthroughs instead of completionist or +100% runs of games. As van Vught & Glas explain in an article describing the different options of gameplay for students researching video games, exhaustive play even in simple games takes a tremendous amount of time, making it essentially impossible for open-world games (2017, p. 6). In a reasonably exhaustive playthrough, the player-archivist completes as much as the game as possible without necessarily trying to find every easter egg, trophy, or achievement. Of course, what is meant by a reasonably exhaustive playthrough will vary depending on the genre of the game being recorded. In the case of *Jersey Devil* (1998), a 3D platformer developed in Quebec, a playthrough of the game's entire narrative was realistic as the game is fairly linear.

Gameplay recordings only offer vicarious experiences to those watching them, but they can also offer advantages that playing the original game cannot. First-hand experiences with games have worth, but many games are quite difficult to play even for expert game players. Games such as *Battletoads* (1991), or more recently *Dark Souls* (2009), are good examples of games necessitating a high skill level. Should a student, researcher, or anyone interested in these games not have the necessary skills or time to complete them using original hardware and software, Longplays offer a great alternative. Additionally, Longplays of many games are available online, though most of these recordings are not necessarily intended or suited for academic research. Indeed, there are multiple resources dedicated to Longplays – such as *World of Longplays*, *C64 Longplays*, and *Recorded Amiga Games* – but they do not hold recordings of each and every game that has been produced and, even if they did, these recordings might vary in terms of quality and level of professionalism. More obscure games that are not part of the video game canon are also much less likely to make their way into these platforms, especially if they are from a highly localized game production scene. If Triple-A games developed in the Quebec such as *Assassin's Creed* (Ubisoft, 2007) or *Batman: Arkham Origins* (Warner Bros. Games Montréal, 2013) have their share of Longplays, this is not the case for indie productions like *Sang-Froid: Tales of Werewolves* (Artifice Studio, 2013) or *Mages of Mystralia* (Borealys Games, 2017). To be sure, preserving gameplay through alternative means, would it be emulation or recordings, has been criticized by scholars who put much emphasis on the use of original material, such as Andrew Reinhard. In *Archeaogaming*, he claimed that:

> [a] game cannot be separated from the hardware on which it was played. […] MAME emulators (software that ports arcade games to other platforms such as personal computers) can suffice to some extent, but there is no substitute for learning how to play a game using the original controllers (2018, p. 169).

Indeed, playing games on and with original technology – original platform, controller, and software – can prevent possible distortions created when combining technologies from different eras, like larger or higher resolution televisions, something James Newman describes quite aptly in *Best Before* (2012, p. 137-154). Yet, given the fact that original material is not eternal, there needs to be alternative methods for video game preservation, one of which is gameplay recordings.

Recordings are imperfect and result in the loss of some aspects inherent to the original experience, such as direct interaction with original hardware and peripherals, but there is still a way to mitigate some of these losses. For instance, when recording Let's Plays at the Netherlands Institute for Sound and Vision, Glas, Van Vught, & Zijlstra (2017) advocated for the use of original technology. They argued that "capturing encounters with the original hardware and software creates a more authentic experience than having players engage with

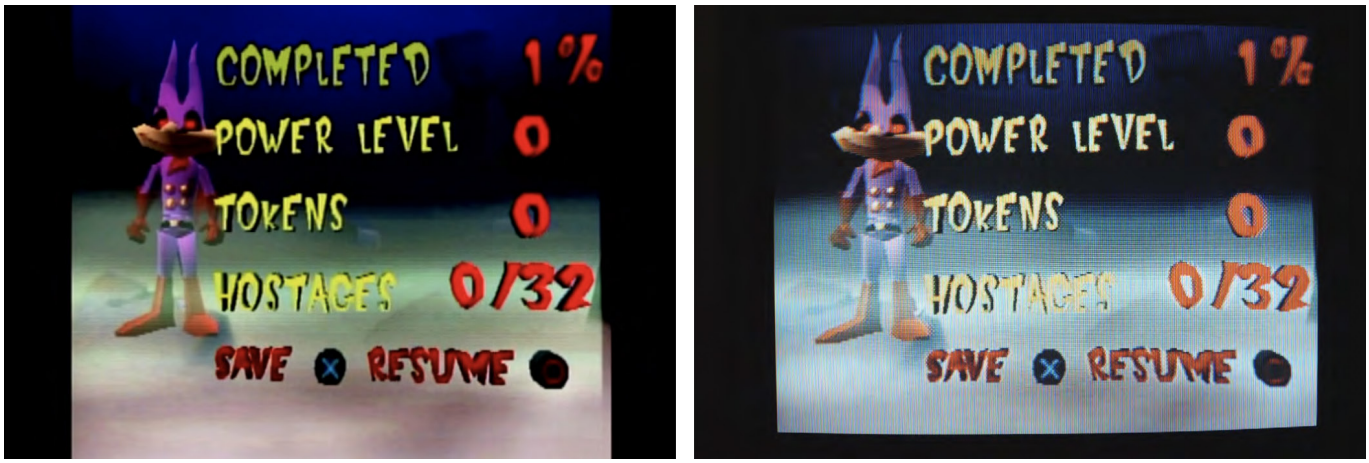

Figure 1: Jersey Devil as played on the PlayStation 1 and a CRT TV at LUDOV. Left image, recording with a video capture card. Right image, recording with a camera.

an emulator on a contemporary PC" (p. 141). As LUDOV already has such material in its collection, we employed it to its full potential in order to capture gameplay as authentically as was possible. In addition to utilising original hardware, software, and controllers, this also meant using original displays and recording play sessions with a camera instead of other capturing tools, when relevant. While it would have been possible to solely employ devices capturing video signal directly from the platform to record our Longplays, like the Elgato video capture card does for console games, they remove some of the specificities of older screens, such as the scan lines of CRT TVs, and flatten the image (Fig. 1). This is in line with our goal to produce archives whose audiovisual aspects are faithful to original output signals. However, when capturing play sessions of games developed for consoles with HDMI output and produced for high definition, 4k, or 8k displays, modern software and devices do not mask the specificities of the screen as much as it would for older displays. As a result, we opted to record such games with the Elgato Game Capture HD.

Preserving a certain level of authenticity is a laudable objective in any video game archiving project, but many scholars have emphasized that aiming to preserve the original experience of video gaming should not be the ultimate goal. When dealing with the past, and even despite our greatest efforts, it is impossible to fully capture the past as it was. Swalwell has argued that video game preservation should move on from the original experience and embrace alternatives, such as emulation and documentation, to ensure the long-term preservation of the medium (2017). Newman makes a similar claim when he states that perhaps we should let video games die and instead focus on other methods for preservation (2012, p. 154-158). This line of argumentation aligns with literature on media art preservation, of which video game preservation is a subset. When investigating digital preservation, Cosetta G. Saba describes how

digitalization undermines "the idealistic notion of uniqueness, originality and thus 'artistic character' as a quality belonging to the non-repeatability of the work", due to the process of continuous encoding and re-(encoding) necessary when transferring digital files from one format to another (2013, p. 105). As a result, she asserts that "media art proves to be 'archivable' only from a documentary standpoint, given its multidimensionality and material, conceptual and progressive complexity" (2013, 103). It is through that documentation that a greater understanding of video games can be achieved.

Although video recordings, or any other method of gameplay preservation, have value on their own, it is their combination with other material, through documentation, that leads to the effective preservation of video games. The archive we are in the process of building therefore does not only contain Longplays of games, but also informational sheets containing contextual information on every game, such as details on their developers, press articles related to the games, reviews, encyclopedia entries, and paratextual material. All of this material is amassed in order to provide a wider context to the game, rather than simply what is in the video recording. In essence, the resulting archival packages espouse Guay-Bélanger's view that video games are assemblages and that material relating to a game carries it aura (2022, p. 667-668) and Saba's claim that:

> the digital archive can be an ideal platform for the 'cultural conservation' of media artworks [...] as a process that not only documents and preserves the technological and material dimensions of these complex works, but also the cultural contexts in which they emerged and were seen (2013, p. 104).

By creating packages that include multiple aspects of a game, this provides those who consult the archive – should they be students, researchers, or the public – with cultural context about the game, something video recordings cannot provide in and of themselves. An archive which would only include gameplay recordings would solely emphasize what is happening on the screen rather than the "assemblage of human and non-human related components including the game and the player's incorporeal enunciations and actions as well as their many socio-economic, cultural and historical linkages" (Karppi & Sotamaa, 2012. cited in van Vught & Glas, 2017). These packages therefore offer a wealth of material designed to provide people consulting them with the necessary documentation to understand a game in all its complexity.

The goal of this archiving method, and of this article, is to make scholars, heritage institutions, and even fan archivists reflect on their practices and to incorporate changes, turns, and critical rifts to avoid dead-end pathways. We ought to think more critically about video game and gameplay preservation for the next decades of game studies. The reflections we provide here stem from years of archiving games at LUDOV. What follows explores the intricate pro-

cess of selecting games for inclusion in our archive and the creation of archival packages through the *Game(play) Archives* protocol.[2]

3. METHODOLOGICAL AND CULTURAL DIMENSIONS OF ARCHIVING

As the collection of our video game laboratory grew, we became increasingly aware of the need to judiciously select our next acquisitions. Until recently, we had been acquiring games related to research projects (on interactive movies, horror, and other genre specific games) or classes (when professors required specific titles), when good opportunities arose (via Facebook Marketplace, word-of-mouth, etc.), when new platforms were released, or when older platforms would stop being supported by their developers. The whole acquisition process needed a new direction, a purpose. Due to Quebec's important role and interesting position in videogame history, we elected to build a sub-collection within our inventory focused on video games developed in the province Quebec and give precedence to our local history.

Doing local history very often requires locating material absent from mainstream (official) heritage institutions or, since the rise of the internet, from the web. LUDOV's goal of searching for titles developed in Quebec proved quite difficult, since we could not find relevant resources pertaining to a provincial corpus. While The Bibliothèque et archives nationales du Québec holds some relevant titles, most of them date from 2012, when Warner Bros, Electronic Arts, and Ubisoft donated a first batch of games. A website entitled *Games from Quebec* does exists,[3] but it only lists contemporary mainstream titles, as this site is part of the promotional strategy of La Guilde du jeu video du Quebec, an association of both large and independent game developers in the province. *Games from Quebec*'s lack of considerations for games made before the 2010s furthered our interest in building a platform that includes a wider variety of games, and as a result our lab team assembled an initial selection of 30 titles.[4] Due to time constraints and limited resources, like any group or institution working towards the preservation of heritage, we faced some difficult choices when delineating our corpus. Most games were selected because they had been the subject of previous publications (Arsenault & Mauger 2012, Arsenault & Guay 2021, Lavigne 2021), while others made the list since they were popular at the time they were released, and their legacy seemed likely.

Our list of games tries to strike a balance between games developed by international companies, smaller studios, and individuals. It also attempts to account for the diversity of titles made in Quebec by including games emerging from across the long history of game development in the province, such as titles published before the arrival of Ubisoft in Montreal in 1997, and games developed for local platforms, such as Vidéotron's Vidéoway.[5] Of course, the further we go back in time, the harder it becomes to locate information on games from a localized development scene and to find functional versions of these games. While challenging, conducting research on games for which there is no playable ver-

2. A link to the protocol in interactive guide format is available on the project's website: https://www.ludov.ca/en/Documentation/the-gaming-sector-in-quebec. Please note that it is hosted on the Université de Montréal's continuing education platform, StudiumFC, which is accessible to the public by logging in as a guest.

3. https://www.gamesfromquebec.com/en/

4. https://www.ludov.ca/en/Documentation/the-gaming-sector-in-quebec

5. Loto-Québec is a state-owned corporation conducting and regulating gambling and lottery in the province. The Vidéoway machine was a television decoder distributed for Vidéotron TV subscribers in Quebec between 1989 and 2006 (Lavigne 2021). Because all games on the Vidéoway appear to be lost forever, we thought it was important document their existence.

sion or for which little is known could stimulate interest in them. Furthermore, showcasing those titles on LUDOV's website might attract the attention of their designers, or even their acquaintances or relatives, and therefore help preserve "lost" games, as was the case for *Mimi*. We viewed this first selection as a good first step towards a larger-scale project on video games from Quebec.

Beyond facing the issue of locating games to assemble a corpus and retrieving basic information about them, it is also necessary to have a realistic scope for the selection of a corpus. In our case, we pinpointed two aspects related to the cultural impact of games made in Quebec. First, we wanted to understand the reception (provincially, nationally, and internationally) of the games included in our list. This led us to include game websites, reviews, awards and paratextual elements in the cultural preparation phase of building an archival package (described below). Second, we were interested in the dynamics between video games made in the province and the inclusion of Quebec cultural elements, or lack thereof. In existing international archives or Longplays on YouTube, cultural elements relating to Quebec depicted in games are rarely emphasized. For instance, *Kona*'s (Parabole, 2017) environmental details, which include older snowmobile models (built in Valcourt, Quebec, by Bombardier, one of the most well-known corporations founded in the province), ice hockey cards featuring Montreal Canadiens players, and Expo 67 posters can be overlooked. This is also the case for the local folktales framing the action in *Sang-Froid: Tales of Werewolves*. But these in-game elements have great cultural significance and offer insights into Quebec's history and its representation in video games. *Kona* and *Sang-Froid*, and other games like them, are thus more interesting for our project than games that may be more popular, as they capture the culture from which they emanate. With these methodological and cultural dimensions of archiving in mind, we developed a thorough archiving protocol, *Game(play) Archives*, to document video games made in Quebec, from their reception to their use.

It should be noted that this is a project still in its infancy. What we present below emphasizes the method rather than its results. At the time of writing, we used the protocol to begin the process of archiving 5 of the 30 games we identified. Hence, there is still a lot of work to be done to obtain final results and the protocol itself is also susceptible to improvements.[6]

4. INTRODUCTION TO *GAME(PLAY) ARCHIVES*: A THOROUGH PROTOCOL

Game(play) Archives was developed to achieve two main goals. The first is to introduce students and game aficionados to archiving practices, to teach them how to conduct historical research relating to games and show them why it is important to proceed methodically. For this purpose, the protocol includes resources about how to gather cultural data about games, tools to organize said data, step-by-step instructions for recording gameplay, and general rules concerning the video game archiving process. It takes the form of an interactive

6. Obviously, we welcome feedback from archivists and testers, who may encounter issues we have not anticipated.

book containing branching scenarios, forms to fill in, hotspot images, interactive videos, and many illustrated examples to accompany novice archivists in their first steps. The second aim of this protocol is to establish archiving norms for game researchers and curators. As we have already mentioned, the process of archiving games is far from being formalized in game studies. Since our protocol offers rationales for our choices and is open to scrutiny, it ensures methodological transparency and may act as a starting point for other archiving projects. *Game(play) Archives* can be adapted to the specificities of a specific game or different cultural contexts and be appropriated by different communities of practice (universities, journalists, librarians, fans, etc.). Consequently, our protocol acts as a key tool to the effective preservation of game(play). In the following section, we outline four fundamental steps to the archiving process we have implemented in our protocol: cultural preparation, technical preparation, gameplay archiving, and visualization. We intend to share the lessons we have learned through experimentation and offer recommendations to improve the archiving process for video games.

4.1 CULTURAL PREPARATION

As described above, seeing games as assemblages requires an understanding that material, audiovisual, and cultural preservation are mutually supportive. The cultural preparation of our approach serves to inform the recording and visualization process. On the one hand, the archivist must be able to play a given game to produce a gameplay recording. Some games may cause problems in this regard because of their difficulty level, unclear objectives, or complicated interface, making the archivist unable to finish the game and resulting in an incomplete recording. To prevent these problems, the archivist must study the game before playing it, consulting its manual and any documentation that might assist them in their task. On the other hand, the viewer, who is not necessarily an expert on the game, must be able to make sense of the gameplay recording. Without some background information, the game recording is likely to be pedagogically sterile, as the viewer may not understand its relevance. For instance, without proper context, it would be harder to understand why a game such as *Jersey Devil* was included in our archive since it does not reflect the province's cultural specificities. To provide context about the games we record, we gather metatexual and paratextual information, such as news articles and box covers. This also contributes to the archivist's cultural preparation, as they must gain an understanding of the game's development context, historical reception, and more. This, in turn, informs their play and focuses their attention on interesting elements within the game, such as *Kona*'s environmental details which have high cultural significance. Not ensuring that archivists are aware of the cultural context of a game, both in terms of where it was developed but also of in-game content, could cause them to overlook cultural specificities and therefore obscure them from the historical record.

Our first attempts at gathering information on games made in Quebec, which focused on the games that were already in our laboratory's collection, were undertaken before the beginning of the *Game(play) Archives* project and relied on the help of two undergraduate students in our video gaming program. This forced us to develop a research template to help these two students locate and obtain information more effectively, and which now serves as the cultural preparation stage of our protocol. This work resulted in game datasheets consolidating diverse types of information about the games they researched: where the game was developed, on which platform(s) it was published, if it received awards, its availability at the laboratory, its links to Quebec's culture, etc. In addition, all the information included in these datasheets is supported by references and a bibliography. Each sheet is accompanied by scans, pictures, or screenshots of every item in the bibliography,[7] which helps future inquiries. Our datasheet could serve as a template to other projects with similar aims, as they could (and should) adapt the sheets according to their needs by adding, modifying, or removing any of the categories we included. The lab's website contains examples of game datasheets created with it.[8]

6.2 TECHNICAL PREPARATION

Before proceeding with gameplay recording, one needs to take into accounts several technological considerations. As mentioned earlier, gameplay archives should be usable by anybody, even non-players, and must reflect the limitations created by the intersection of original hardware, software, and display used to play the game. In a sense, our project strives to create an audiovisual archive which shows how the game was played around the time of its release. It would be possible to play games via emulators, since they often have shaders or filters to mimic the look of a cathode-ray tube screen, but they cannot fool someone with a trained eye. As stated earlier, recording audiovisual signal from old consoles with devices that capture video signal, such as the Elgato video capture card, also flattens the image. Most CRT TVs of the 1980s and 1990s had a curvature which cannot be recreated by modern emulators. Additionally, pixels on CRT and liquid-crystal display (LCD) screens do not interpret visual signals the same way. Alvy Ray Smith explains that pixels are interpretations of the points constituting an image (1995). Points interpreted on a CRT are fuzzy and sometimes colours bleed between them as the image is drawn by the photons on the tube. An LCD consists of a fixed set of pixels on a grid. Points drawn on the LCD are interpreted as tiny blocks, which alters radically the look of images once developed for CRT displays. Workarounds such as trying to directly record the audiovisual signal of old consoles and computers with capture cards or DVD recorder are, in our experience, not satisfying (and sometimes challenging). Recordings are often distorted, colours are altered, and real-time playing is made almost impossible. Direct recording of signals also often reveals parts of the image that were once masked, as Altice demonstrates in an analy-

7. To prevent being flagged for copyright violations, some of this paratextual material is only accessible in-person.

8. https://www.ludov.ca/en/Documentation/the-gaming-sector-in-quebec

sis of both pixels and masking for the Famicom (2015). Moreover, computers using video graphics arrays (VGA) need specific capturing devices that can transform the signal from analog to digital. Some computer games use different resolutions or refresh rates which can cause recording errors (Tech Tangents, 2019). While working on a project unrelated to this article,[9] we tried to capture the first half-hour of *The 7th Guest* (Trilobyte, 1993) and *It Came from the Desert* (Cinemaware, 1989) on a CRT. We experienced our fair share of technical difficulties. First, our sound recorder did not detect the game audio. And once it did, it was heavily distorted. Afterward, the game screen was misaligned on the recording created by our capture card, being either decentered to the left or the right. Lastly, filming *The 7th Guest*'s launch menu also caused problems, as the display framerate of the computer's desktop was not identical to the one used by the game, therefore creating visual artifacts, an issue we discuss in greater depth below. It quickly became clear that we needed to devise solutions tailored to different technologies. This compelled us to develop recording scenarios that fit the diverse audiovisual technologies on which video games were played.

6.3 CRTS, CAMERAS, AND AUDIO RECORDER

Not every recording device is suited to capture gameplay footage from a given platform, meaning recording practices have to be adapted to the platform on which the game is played. As such, to capture quality game(play) footage when it is generated by older computers with VGA output, consoles with coaxial output (e.g., the Sega Genesis), or without audiovisual output (e.g., most mobile devices), we mount a camera on a tripod and film displays directly. Nevertheless, it is important to remember that most cameras do not have the necessary features for this task. One problem that stems from filming screens is the addition of visual artifacts produced by the desynchronization between the camera's shutter speed and the display's refresh rate. This kind of artifact appears as a wide, dark bar scanning the screen from the bottom to top. The scanning rate may be rapid, giving the impression that the screen is flickering, or slow, occurring once every couple seconds. Generally, cameras do not allow to adjust shutter speed with sufficient accuracy to remove this artifact. For example, common shutter speed settings jump from a speed of 1/30th to 1/60th of a second, which ends up mismatching the exact refresh rate (measured in hertz) of the monitor or TV screen. However, some cameras allow to select more precise shutter speed configurations, such as the Panasonic GH5 and its "synchro scan" setting, which we have used successfully.[10]

Concerning sound recording, two options are available to gameplay archivists: directly recording from a computer or television or using an external recorder. The first option entails using the 3.5 mm audio jack from a camera and connecting it to the computer or television and recording the sound while the camera is rolling. This is the ideal solution as it does not produce undesirable audio artifacts; the result is the same as using headphones. If the required output is

9. See the entry on the "Remediation of Cinema Images in Videogames" for the *Encyclopedia of Film Techniques and Technologies* (Aycock, Poremba, & Therrien, 2020).

10. That being said, the resulting image is not perfect. Our camera creates a moiré effect which does not originally appear on a CRT TV, probably due to its high native sharpness. We add a faint blur in post-production, using DaVinci Resolve, to cancel this effect and preserve the "aura" of the game image. Obviously, these kinds of manipulations should be done sparingly.

unavailable, for instance when working with older computers, the second option is to use a separate recorder, such as those from the Zoom handheld series, to capture the sound coming out of the speakers. This means, however, controlling the environment to prevent undesirable sounds, such as people talking or phones buzzing, as well as synchronizing audio and video in post-production. In any case, we advise conducting technical tests first and comparing the resulting recording with the console or computer audiovisual output and adjusting settings in order to maintain accuracy. As an illustration, if the footage looks too blue or yellow, the white balance may be off, and if louder noises in the game cause audible distortions, the level of sound recording may be too high. The archivist must remain vigilant for technical problems as it is a mistake to blindly rely on recording technologies to produce gameplay archives.

6.5 GAME CAPTURE DEVICES AND SOFTWARES

Even though the Elgato Game Capture HD we use enables to record a wide variety of audiovisual signals, we decided to limit its usage as a backup for CRT recording and as a singular method for recordings games on platforms with HD signals (720i and above)[11] and image ratio of 16:9. Thanks to extensive tests made with *Jersey Devil* on the Sony PlayStation 1, we were able to compare the results between the GH5 MII camera and the Elgato recordings to pinpoint distortions (see figure 1). Furthermore, the additional recording for older platforms captured with the Elgato Game Capture HD acts as insurance in case something goes wrong with either recording (a duplicate recording cannot be created with old computers such as Apple II or Commodore 64 at this moment, since we do not have compatible capture cards for those platforms). For modern consoles, we do not have to split the signal between the television (recorded by the camera) and the capture card, since the HDMI output on the Elgato acts as a passthrough, allowing us to play in real-time on televisions with HDMI inputs. The main limitation with HDMI and Elgato's capture cards is the High-Bandwidth Digital Content Protection (HDCP) protocol, a security layer which prevents capture cards from recording the full interaction with a console as some menus are protected by this protocol. Also, recordings are prone to compilation errors, since the Elgato software first records videos as MPEG Transport Stream (.ts) before enabling MPEG-4 exportations (.mp4, which can be modified in post-production if needed). This problem can be remediated by erasing corrupted frames within the MPEG Transport Stream video file. Thus, we have to manage two video formats (the uncompressed ts file and a compiled mp4) when we use the Elgato Game Capture HD, which also ensures we have two copies of every recording.

The Open Broadcaster Software (OBS) helps us archive modern computer games (available on Steam, GOG, Itch, Epic Games, emulators, browsers, etc.). In essence, this software enables the recording of video and audio content managed by a computer without much limitation. The main drawback of this

11. The Elgato Game Capture HD, as with all capture cards, does not enable any and every resolution to be recorded. When we tried to directly record some VGA signal via a HDMI adapter, we found it is not compatible with certain configurations for old games in 320x200 or in 640x480 (*Road to India: Between Hell and Nivarna* and *Tom Clancy's Splinter Cel*l on Windows use the second resolution by default). Other capturing devices might be purchased at some point to increase the variety of audiovisual signals we could directly record.

method is the highly customizable interface of OBS; it is not plug-and-play. Settings working for a game might not be compatible with another. This means we must test configurations on a game-per-game basis, which makes the creation of a configuration protocol arduous and time consuming. Fortunately, it is fairly easy to find troubleshooting guides online. Basic screen and audio device recording work for most games and browser-based content.

Unfortunately, as selecting a video codec and file format is somewhat of a Pandora's box, we have not been able to finalize the post-production process of this protocol. Indeed, there is a wide variety of options – varying in quality, bitrate, widespread use, and stability – and there is no universal standard for audiovisual preservation. We therefore have not been able to decide on the codec and file format we will use to create the final, complete recordings of our Longplays. To ensure access and visibility of our gameplay archive, especially online, we will have to strike a balance between the size and the overall quality of our output. Our choice will have a direct impact on the type of analysis those consulting our archive will be able to conduct, since if video quality is too poor, frame by frame analysis might not always be optimal.

6.6 GAMEPLAY ARCHIVING EXPERIENCE

Once the cultural and technical preparation is completed, the archivist is ready to start recording gameplay. We have already discussed the value of the Let's Play and Longplay models, but both forms of gameplay recording provide incomplete understanding of a game. It goes without saying that watching someone play does not tell the full story of how they are interacting with the game, that some rules and mechanics may only reveal themselves by actually playing the game. Gameplay archives must take into account this downside, for example by providing viewers with an overview of the actional possibilities and menu configurations available. When previously addressing the relevancy of exhaustive playthroughs in archival projects, we also argued against attempting to complete all achievements and secondary objectives of a game, as it is a time-consuming and demanding task. Still, one should include as many elements as possible in the gameplay recording. This is all the more important given that these elements might be neglected in pre-existing gameplay footage available on the web. In the *Game(play) Archives* protocol, we identify several game elements that should be recorded: the game launcher, opening logos, credits, cut-scenes, "demo mode" and high scores list triggered by remaining idle in the start menu, start menu options (e.g. language settings, audio channels, etc.), pause menu options, tutorials, effects of pressing each button on the controller (e.g. in an avatar-based game), main objectives, and more. Even though many of these elements are easily accessible, they may be skipped in pre-existing gameplay footage for various reasons – the player might not have seen the relevance of showing the game launcher or might not have known there was a "demo mode". Details that seem trivial at first glance are especially important

for game preservation since they are also the first to be forgotten. Moreover, what game elements archivists decide to record must also be adapted depending on the game's genre. For narrative games, completing the main story seems sufficient, but for some strategy or mobile games that do not feature a campaign or story mode, or where these modes are not as relevant, it is more appropriate to complete many matches to give a satisfying gameplay overview. Considering that games with emergent gameplay and repeatable content could be indefinitely recorded, it is often up to the judgment of the archivist to decide when the gameplay recording is sufficiently complete. There is, of course, always some degree of arbitrariness when archiving games.

6.7 VISUALIZATION

The visualization step relates to post-playing and post-recording workflow. At LUDOV, footage is reviewed to ensure proper playback, implement backup strategies, document each gameplay session, and plan accessibility as well as discoverability regarding the future online sharing of our gameplay recordings. We stumbled upon issues regarding nomenclature of video files. Naming conventions needed to reflect the fact that play sessions were recorded in hour long increments, therefore signaling which part of the recording each file represents and other meaningful information, such as the date of creation of the file, hardware/software used to record, pre/postproduction files, etc. Nomenclature also helps us organize uploads and descriptions on visualization platforms, such as YouTube. Online descriptions include the title of the game and a brief rundown of the content in each of them: levels, bosses, story, relevant facts linked to Quebec's culture. Our descriptions emulate those of game guides or walkthrough, since it is much friendlier to navigate videos if the language used is similar to what is already published by journalists or the player community.

7. CONCLUSION

We cannot enter the next decade of game studies without taking care of and giving great consideration to the objects and activities – the (game)play, to use Newman's words – at the center of our practices and reflections. The protocol we developed is a crucial part of successfully preserving games, both in terms of their cultural and technical aspects. By archiving games made in Quebec, we are building a collection of packages which could help raise awareness of our province's contribution to video game history and to initiate a conversation on historical methods in game studies. Both wittingly and unwittingly, video gaming communities have been working towards the preservation of video games for a significant amount of time. It was therefore only natural to borrow from their practices, in the form of Longplay recordings, in order to preserve the heritage of this medium. Nevertheless, video games are not solely about what is visible on the screen; their history and nature is also found in their meta and paratextual material. Indeed, when considering this medium in

all its complexity, it becomes quite clear that they are assemblages. As such, the archival package and protocol we developed (and are still developing) attempts to consider games not only as game or technology, but also as cultural artefact.

Preserving gameplay footage of video games is an extensive, complex, and daunting task. Issues of selecting recording device(s) or display(s), the various aspects within games themselves (menus, demo modes, side quests, etc.), and file format shows how much work still needs to be done before established protocols for game preservation are devised. Nevertheless, we attempted to create a thorough protocol to stimulate new and productive conversations within the field of video game preservation, both within academia but also amongst citizen archivists. It is our hope that *Game(play) Archives* will lead to greater discussion on this topic and eventually to the establishment of better informed and transparent archiving methods for the preservation of video games.

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